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The two papers in this report are: (1) "The Use of Portable Video Tape Recorders and Micro-Teaching Techniques to Improve Inservice Training in Area Vocational Schools and in the Vocational-Technical Programs of Junior Colleges," and (2) "The Use of Portable Video Tape Recorders and Micro-Teaching Techniques to Improve Supervision of Prospective Teachers in Vocational-Technical Education." They report a study on the feasibility of using video-tape recordings and micro-teaching techniques to improve the inservice training of teachers and student teachers in vocational-technical programs. Attention was focused on the problems of motivation for change through feedback mechanisms, the elements of systematic analysis, and the development of competency in specifi teaching skills. Teachers participating in the project were taped for 10 to 15 minutes during their classes. These tapes were analyzed by the teacher and a project staff member for suggested modifications in teaching techniques. Some implications for consideration in future project activities were teacher attitudes twoard innovation, the availability of portable video recorders, and more effective planning and administration of program activities. It was concluded that these techniques may have a strong appeal to vocational-technical educators for improvement of their teaching skills. Two bibliographies are included (WB)

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THE USE OF PORTABLE VIDEO TAPE RECORDERS AND MICRO-TEACHING TECHNIQUES TO IMPROVE INSTRUCTION IN VOCATIONAL-TECHNICAL PROGRAMS IN ILLINOIS

A PILOT STUDY*

An Interim Report--March, 1968

Arye Perlberg, Robert A. Tinkham, and Richard Nelson

*Presentation at 1968 Illinois Vocational Association Convention (IVA), Chicago. This presentation is based on the two attached papers.

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THE USE OF PORTABLE VIDEO TAPE RECORDERS AND MICRO-TEACHING TECHNIQUES TO IMPROVE IN-SERVICE TRAINING IN AREA VOCATIONAL SCHOOLS AND IN THE VOCATIONAL-TECHNICAL PROGRAMS OF JUNIOR COLLEGES

By

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INTRODUCTION

Traditionally, in the United States and more so the world over, the pre-service and in-service development of pedagogical competencies of vocational-technical teachers has been slighted. Emphasis was placed on developing competency in technical skills and in the theoretical subject matter relating to a trade or occupation. These skills were acquired mainly by occupational experience and some type of formal learning. It was natural for vocational-technical educators to assume that the pedagogical skills too would be acquired through practical experience, trial and error.

In recent years there has been, however, a growing realization among vocational-technical educators that formal professional education should receive greater attention than it was given in the past in the pre- and in-service preparation of vocational-technical teachers. Professional education programs for vocational-technical teachers are found in many universities, and various in-service programs are also conducted in this area.[1, 2] In spite of this, the present situation is far from satisfactory. There is a need to evaluate the present range and nature of activities before attempting to expand them to a larger number of vocational-technical educators.

This paper is an interim report of a pilot study conducted by the Vocational and Technical Education Department, College of Education, at the University of Illinois in Urbana, and supported by a grant from the Research Coordinating Unit, Division of Vocational and Technical Education, Illinois State Board of Vocational and Technical Education and Rehabilitation.

PRE-SERVICE AND IN-SERVICE TEACHER EDUCATION

Present practices of pre- and in-service professional education have undergone severe criticism from outsiders and insiders of the profession. On the one hand, Conant[3] in 1963 criticized sharply the education of the

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[1]Moss, Jerome J. Review of Research in Vocational-Technical Teacher Education. Minneapolis, Minnesota Research Coordination Unit on Occupational Education, 1967.

[2]The Center for Vocational and Technical Education. Ohio State University: National Vocational-Technical Teacher Education Seminar, September, 1967. (Proceedings to be published)

[3]Conant, J. B. The Education of American Teachers. New York: McGraw-Hill, 1963.

the American teacher and, on the other hand, LaGrone[4] has proposed many revisions in present practices of teacher education. The theme of the recent convention of the American Association of Colleges for Teacher Education was "Issues and Innovations," and an examination of the topics discussed in this particular convention, and in recent other educational conventions such as the A.E.R.A. or A.V.A., indicate the high degree of dissatisfaction with existing programs. From a review of the literature on the problem, one gets the following impression, as summed up by Borg,[5] that teacher education programs, both pre-service and in-service, are

> ...not as effective in providing teachers with the knowledge and insight needed to understand the learner and the teaching-learning act. With regard to building the specific skills and behavior patterns the teacher needs to efficiently structure a variety of teaching-learning situations within the classroom, it is suggested that most current programs do virtually nothing.

THE ATTITUDES OF VOCATIONAL-TECHNICAL EDUCATORS

Vocational-technical educators have been more critical of professional pre- and in-service education than other educators. Being involved in teaching technical skills and subject matter that has a clear relationship to the performance of these skills, many of them have been somewhat skeptical about participating in programs in which it is difficult to see a direct relation between what is learned in the professional education course and its application to the teaching process in the classroom. This is probably one of the major reasons for the low regard that many vocational-technical educators have toward professional education. However, it is safe to assume that vocational-technical educators who are becoming more aware of the need to understand the educational processes in the classroom will participate more intensively in pre-service and in-service professional education programs if they are meaningful and have an effective impact on their teaching.

Some recent innovations in teacher education, such as the use of video tape recorders and micro-teaching techniques, offer new opportunities for the improvement of instruction in the schools and for the preparation of new teachers.[6] Preliminary experimentation leads one to believe that vocational-technical educators, familiar with the potentialities found in these innovations, will accept and probably benefit more from these innovations than teachers in other areas.[7]

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[4]LaGrone, Herbert. A Proposal for the Revision of the Pre-Service Professional Components of a Program of Teacher Education. Washington, D.C.: The American Association of Colleges for Teacher Education, 1964.

[5]Borg, W. R. "The Minicourse: Rationale and Uses in the In-Service Education of Teachers." (Unpublished paper presented at the 1968 A.E.R.A. Convention)

[6]See Swanson and Kramer's chapter VII "Vocational Education Beyond the High School" in the 64th N.S.S.E. Yearbook Vocational Education.

[7]Schueler, H., Lesser, C. S. and Bobbins, A. L. Teacher Education and the New Media. Washington, D.C.: American Association of Colleges for Teacher Education, 1967.

The purpose of this study is to investigate the feasibility of using portable video tape recorders and micro-teaching techniques in in-service training programs of two area vocational schools and a vocational-technical department of a junior college. It was assumed that the regular use of these media and techniques would be instrumental in improving instruction in these educational institutions. Before describing in detail the specific objectives and activities of this study, it seems proper to explain the nature of these new media and techniques and their relevance to the improvement of teaching processes.

FEEDBACK THROUGH PORTABLE VIDEO TAPE RECORDERS

The modification of teacher behavior in the classroom depends on various determinants such as motivation for change, goals to be achieved by change, adequate feedback of the teacher's present behavior and its relationship to desired goals, and adequate conditions in the system conducive to the desired change. The problem of adequate feedback seems to be a key factor to some of the other mentioned determinants. The development of goals depends to a great extent on knowing, measuring, and relating variables in classroom interaction to the teaching process. It can be assumed also that adequate feedback could have an impact on a teacher, motivating him to modify his behavior.

A better understanding of the complex phenomena of classroom interaction has been gained in recent years with the development of various methods of observing, analyzing, and measuring classroom behavior.[8] Originally, one limitation of these methods was that they were based on the perception and mental image of a live observer whose observation and written recording may have been impaired by variables such as perceptual distortion, attention limitation resulting from intrinsic factors within the observer, or extrinsic factors occurring in the classroom. Personal biases and memory lapses also contribute to distortion.

The use of audio tape recorders to record classroom activities facilitates repeated analysis of classroom interaction by several people, thus removing some of the personal distortion. Moreover, it enables the teacher who is involved in the recording to hear himself and analyze his own activities. However, both live and audio systematic observation methods have traditionally been limited to verbal interaction in the classroom, thus eliminating many essential nonverbal variables which determine classroom interaction. It is quite possible to assume that many teachers will reject a proposed modification of their classroom behavior on the basis of an audio recording only since it does not provide the "whole picture" of what really occurred in the classroom.

The introduction of portable video tape recorders enables the recording of events in the classroom with minimum disturbance to the teacher and students.

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[8] Medley, D. M. and Mitzel, H. E. "Measuring Classroom Behavior by Systematic Observation," N. L. Gage, Ed., Handbook of Research on Teaching. Chicago: Rand McNally and Company, 1963.

Relatively inexpensive facilities including two cameras permit simultaneous recording of the teacher's and students' activities. The recorded tape when projected on a monitor contains both pictures (split screen) thus enabling a more accurate analysis of tape. It is possible even to make these recordings by controlling the cameras from a remote station.

These relatively inexpensive technological innovations provide an accurate instant feedback of classroom interaction as a whole (verbal and nonverbal). It provides a basis for a reliable analysis and decisions about desirable modification in the teacher's behavior. Once the teacher overcomes his initial anxieties of observing himself, it would seem that there is nothing more convincing to him than the true picture of his classroom interaction. When used properly, this traumatic experience of self-confrontation could enhance greatly the teacher's readiness for change.

MICRO-TEACHING TECHNIQUES

The term "micro-teaching" refers to a scaled-down teaching experience. It is reduced in the length of the lesson which varies from five to twenty minutes duration. Class size is limited typically to three to six students. Micro-teaching was developed by Dwight Allen[9] at the Stanford University Teacher Education Program. Its main purpose is to provide student teachers with actual teaching experiences prior to their appearance in their assigned school. This practice is done in a micro-teaching laboratory with the main emphasis on developing competence in specific teaching skills. The intern teaches a small group of students focusing on a specific skill. He views his tape, analyzing his performance with the aid of a supervisor's critique and written feedback on an evaluation questionnaire completed by learners in the laboratory classroom.

Micro-teaching has been used in Stanford University and at other educational institutions around the country, not only in pre-service teacher education and as a research tool to explore training effects under controlled conditions, but also as a tool for experienced teachers to gain more complete information about their interaction with students for the purpose of analyzing this feedback in a relatively systematic way. Moreover, micro-teaching can be used by experienced teachers for exploration of new teaching techniques. In his discussson of the various uses of micro-teaching, Allen suggests that[10]

> Experienced teachers may gain new insights through adaptation of the micro-teaching model. Under the present framework, if a teacher wishes to try a new approach in a particular lesson,

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[9]Allen, D. W. "A New Design for Teacher Education: the Teacher Intern Program of Stanford University," Journal of Teacher Education, Vol. XVII No. 3, 1966, pp. 296-300.

[10]Allen, D. W. "Micro-teaching: A New Framework for In-Service Education." (Unpublished paper)

> he must wait until the following year to test alternatives to that lesson. In micro-teaching, the teacher can experiment with several alternatives with a limited number of students each time, with the opportunity for immediate evaluation and additional trials. Following this limited application, the plan can then be presented to the classroom. In this way, teachers may experiment with new methods and new content without the risk of defeating student learning and with much more satisfactory timing.
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> The micro-teaching clinic is an effective stimulus for the improvement of teacher performance after a performance plateau is reached in early tenure. The most effective teachers attain a high level of performance early in their careers. Unfortunately, they rarely have the stimulus to further increase their competence. Providing them with an opportunity to try new ideas easily and without risk to student learning can be an important asset to professional development.

Since its inception in 1965, micro-teaching has been modified and adapted for various experimental uses at Stanford and at other universities. A growing trend, for example, is to combine "interaction analysis" systems and micro-teaching techniques in pre-service and in-service education.[11] There is a need to continue with experimentation and adoption of micro-teaching practices to the needs and conditions of the local situation, especially in in-service training programs.

In the present study, the researchers focus on the problems of motivation for change through feedback mechanisms, the elements of systematic analysis, and the development of competency in specific teaching skills. In the present phase of the study, the cycle of teach, review, criticize, and reteach, as practiced in a micro-teaching laboratory, is done in regular classroom situations as will be elaborated on later in the description of the research activities.

OBJECTIVES

The objectives of this study are as follows:

1. To train school personnel in charge of instruction in area vocational schools and junior colleges in the use of micro-teaching techniques and portable video tape recorders.

2. To introduce teachers, in the above-mentioned schools, to these techniques and media and to their uses in improving instruction.

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[11] Several papers describing experiments of this combination were presented at the 1968 A.E.R.A. Convention in Chicago.

3. To observe, evaluate, and explore the problems involved in pursuing such activities in these schools.

4. To prepare interim guidelines and suggestions for schools interested in using these techniques and media to improve instruction.

5. To obtain information needed to prepare a structured design for future research intended to evaluate statistically the effectiveness of these media and techniques.

DESCRIPTION OF ACTIVITIES

Stephen Decatur Area Vocational Center in Decatur, Whiteside Area Vocational Center in Sterling, Danville Junior College and Parkland Junior College (Champaign) were selected as participants in this study. Intensive work has been concentrated only in Stephen Decatur Area Vocational Center and the Occupation-Oriented Department of Danville Junior College.

Two or three representatives from each school participated in a workshop conducted at the University of Illinois. The program included a theoretical introduction to research on teaching with particular emphasis on observation of classroom interaction, feedback mechanisms, and micro-teaching techniques. The use of video tape recorders was also demonstrated.

In the next phase, faculty orientation meetings were arranged in Decatur, Danville, and Sterling in order to introduce the basic concept, media, and research procedures. In the cases of Danville and Sterling, the first meeting was arranged for the whole college and high school faculty. In the next phase the researchers met at Danville Junior College with the Occupation-Oriented Department faculty only.* Separate meetings were arranged with small groups in order to acquaint teachers with the video taping units.

Equipment was then left in the school for teachers to experiment with and to familiarize themselves with taping in the classroom and evaluating their tapes. Faculty members were given the option of participating in this project. A significant number indicated their willingness to take advantage of this opportunity. Staff and equipment limitations, however, permitted involvement with a small group only.

In order to obtain a better diagnostic measure of the participants' teaching behavior which might need modification, the "Illinois Course Evaluation Questionnaire" was administered to students. This instrument is used at the University of Illinois and a number of other universities and colleges to evaluate instruction and instructors. Even though it attempts to evaluate a specific course as a whole, several aspects of the questionnaire do reflect on competency in certain teaching skills. The questionnaire is

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*Additional meetings in Sterling will be arranged in the spring of 1968.

administered as an aid to the main diagnostic discussion between the teacher and researcher after viewing the tapes.

The teachers participating in the project were taped in short sequences of their classes (ten to fifteen minute sessions). The tapes were then analyzed by the teacher and a project staff member. Certain areas in the teacher's classroom interaction which needed modification were highlighted and strategies for achieving such changes were discussed. Another taping session in a regular lesson was arranged in which the teacher attempted to introduce these modifications. Analysis of the tapes indicated that some of the changes that were decided upon during the critique of the first tape were introduced in the next teaching experience. The work in this phase of the project still continues. Different teaching skills according to needs are being practiced with each teacher.

INTERIM RESULTS AND IMPLICATIONS FOR FUTURE ACTIVITIES

The following remarks are based on interim results. However, taking into consideration the results obtained in some other studies conducted around the country*, it is safe to assume that these remarks could provide the basis for the final report.

1. Attitudes Toward the Innovation. Generally speaking, the teachers engaged in project activities expressed favorable attitudes toward the use of these media and techniques aimed at improving their instruction. Since some of these teachers were only oriented to the possibilities inherent in the project activities, but did not have a chance to engage in relatively more intensive work, one has to be careful in predicting their reaction later when they will be more involved in activities. However, it is safe to assume that if certain procedures will be adopted, several possible difficulties may be avoided. Finally, it should be emphasized that teachers, being human, may have ambivalent feelings toward the proposed activities. They may agree theoretically that there is always need for improvement and that they should engage in activities designed to improve instruction on a regular basis. Moreover, the experience with this technological innovation seems to have a special appeal to many people. One teacher, when asked about the uniqueness of video taping as compared with audio taping, said, "After all, humans, like monkeys, are fascinated when looking at themselves." There is probably some fascination in seeing oneself in a television screen, minutes after one has been taped. On the other hand, teachers may be anxious about facing themselves and reluctant to accept what they see. They might be dissatisfied with their behavior and apprehensive about developing this sense of dissatisfaction. Moreover, even if they overcome these hurdles, there is

*As reported in the 1967 and 1968 A.E.R.A. Conventions.

always a fear that this feedback will be used administratively to their disadvantage. Finally, a rational and emotional readiness for change is not enough. One has to have the time, energy, and supportive conditions to work on modification of classroom interaction. An elaboration of some of these problems and proposals of strategies to cope with them will be presented in the following remarks. The order in which the problems are presented is based on the chronological order of the project activities and is no indication of their relative importance.

2. Orientation to the Project. The first orientation to the project, media, and techniques was done before the one-day workshop at the University. Key people in the four systems were approached by phone and were introduced to the purpose of the project. All of those contacted agreed to participate. Written material describing the project, the media, and techniques was sent after the initial exposure to the idea. Final agreement for participation in the project was verified by the school administrator's appointment of two or three people to attend the orientation workshop. Several suggestions were gleaned from the experience gained in the orientation procedures.

First, more preliminary investigation should be made before selecting school systems for experimentation. In addition to the initial contact by phone or letter, visits should be planned to study the system, the faculty composition, their relationship with other departments in the system and the administration, the prevailing patterns of classroom interaction, general attitudes towards innovation, and conditions conducive to introducing change. "Gate blockers" and "gate keepers"* to the introduction of change within the system and the faculty should be identified. The administration's readiness to provide the faculty with conditions for meaningful participation in the project should be ascertained.

A good practice might be to conduct a short orientation session at the local school with key people in the system, before the time of the University workshop, in order to provide the administration with a more realistic picture of the nature of the project, and the benefits to, and responsibilities of, the school or college. The criteria for selection of participating systems should not be only enthusiasm and very definite positive attitudes. On the contrary, it is of utmost importance to experiment also with systems which are not very responsive and are ready to participate in a project with some reservation. In such systems the real challenge is to overcome the resistance to change. The project staff should be involved to a certain degree in selection of participants to the University workshop in order to assure that those selected will be able to be agents of innovation in the system.

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*A term coined by Kurt Lewin in Lewin, K. and Grabbe, P. (eds.), "Problems in Re-Education," Journal of Social Issues, 1945, No. 3.

3. University Orientation Workshop. There was a one-day workshop, devoted to theoretical orientation and a limited practice in micro-teaching techniques and equipment. The participants who came a sizeable distance were reimbursed for their expenses. The workshop was conducted on a Saturday, requiring the participants to contribute their free time. The second workshop in the spring is planned for two days and includes an expansion of theory and practice sessions. It would be desirable to have longer workshops which would be conducted on school time or during teachers' vacations, some of which would give university credit. Such workshops should provide better acquaintance with the general area of research in teaching and related areas. There should be more opportunities for practice sessions in a micro-teaching lab. It is important that each participant take the roles of teacher, learner, and observer. In addition, other methods of classroom observation, such as interaction analysis, should be learned in order to explore the uses of combinations of various methods in in-service programs. Special attention should be given in such a workshop to a discussion of the problems of introducing the innovations to the systems.

4. Portable Video Recorders in Schools and Junior Colleges. The use of portable video recorders and micro-teaching techniques in regular in-service education programs requires that equipment be available in the school for more extensive use. Many more teachers should receive training in the operation of this equipment. It would be worthwhile to explore the possibility of having students operate this equipment as is the case with other audio-visual equipment. Teachers should be able to contact the office of A.V. equipment and ask for a set of video recorders and an operator. They should then have the opportunity to view it alone or with others, according to their choice, in an adequate viewing room.

   If enough tapes are available, it is of utmost importance that a teacher keep his tape for a period of time to permit him to compare his performance at various stages. Whether a teacher has to return the tape or keep it, it is essential to assure him that no one will have access to the taped material without his permission. The tape should be erased, if he so indicates. Certain tapes which may be of value in discussions with other teachers should be kept to serve as models after permission is secured from the person who is taped.

5. Logistics and Scheduling. The effective use of the recorders requires careful planning and administration. Even if teachers themselves or student helpers operate the equipment, there is a need for a program coordinator to organize and schedule the taping and viewing in order to secure optimum utilization of equipment and faculty time.

6. Student Feedback. In the Stanford micro-teaching structure, the teacher, after each lesson, receives feedback from the learners on special evaluation forms. In the University of Illinois study being described here, students, up to the present time, were asked to give a general evaluation (The Illinois Course Evaluation Questionnaire) of the teachers involved in the project. Since taping is done in regular classrooms, the intent is to administer to a sample of students in the classroom instruments asking for an evaluation of the specific lesson.

7. Micro-teaching Clinic. Thus far in the study, all taping has been done in regular classrooms. The teacher was consulted about his preference of a segment of ten to fifteen minutes of the regular lesson that should be taped and analyzed. One possibility which has not been explored is the establishment of a micro-teaching clinic that will from time to time employ students as learners and will enable teachers to do more intensive exploration and experimentation with regard to teaching strategies and teaching skills. This type of activity will require additional budget for student learners. To investigate the feasibility of such a clinic in a junior college or school, it is recommended that the idea be introduced in a regular teachers' meeting.

8. Supervisors and Consultants. From the review of the literature, it would seem that at present most of the projects dealing with the use of video recorders and micro-teaching techniques are still in the research stages and are directed by researchers in universities and research institutions. The real test of the applicability of the system to in-service education is whether it would be possible to administer the program and conduct evaluation procedures with local personnel. The problem is not only the availability of qualified personnel to do such evaluations, but whether teachers will accept one of their colleagues as qualified to help them analyze tapes and develop new teaching strategies. The employment of college and university personnel in the capacity of supervisors is essential in the research phase. In the long run, it will be essential to develop the analysis skills of local personnel who are accepted in this role by the faculty.

MANY WAYS TO IMPROVE THE QUALITY OF TEACHING

It should be emphasized that micro-teaching techniques and the use of portable video recorders are only a few of the new methods of improving instruction. They are not a panacea for all problems of the teacher. A combination of these techniques with various others, such as systematic observation methods of verbal interaction in the classroom, may be of even greater help. The researchers have focused in this project on these specific media and technique, assuming that, by the practicality and reality inherent in them, they may have a strong appeal to vocational-technical educators, and thus are more likely to be used in the teacher's consistant efforts to improve his skill in guiding his students.

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THE USE OF PORTABLE VIDEO TAPE RECORDERS AND MICRO-TEACHING TECHNIQUES TO IMPROVE SUPERVISION OF PROSPECTIVE TEACHERS IN VOCATIONAL-TECHNICAL EDUCATION

By

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INTRODUCTION

Supervised student teaching is widely recognized as one of the most important facets in the process of teacher education. Conant's critical analysis of the education of the American teacher[1] has stirred considerable controversy; however, one of his suggestions that has been widely applauded even by opponents is the establishment of the position of a "clinical professor of education" who would be recognized especially for the quality of his or her teaching and will have the primary responsibility for the student teachers during their induction into classroom teaching. Even though the value of supervised teaching has yet to be demonstrated by controlled experimental research,[2] it is accepted as imperative in teacher education. Moreover, the importance of supervised practice is recognized in the education of trainees in all professions and skilled trades.

Existing techniques and procedures of student teaching required by the profession and by institutions preparing teachers should not be considered as an "optimum" arrived at by research, but rather a result of trial and error and in many cases a compromise between desired optimal goals and reality. On one hand, it is realized that student teacher activities should be increased in scope and depth. On the other hand, there is a shortage of highly competent cooperating or master teachers, University supervisory personnel, and adequate funds to conduct such desired programs. Other weaknesses of existing practices in student teaching are due to lack of understanding and agreement regarding the nature of classroom learning, teaching, and the supervisory process. "Thus, much remains to be accomplished by college supervisors, classroom cooperating teachers, and researchers in establishing definitions of goals in teaching and in assessing the degree to which these goals are promoted through supervision."[3] The same is true with other procedures of student teaching practice.

This paper is an interim report of a pilot study conducted by the Department of Vocational and Technical Education, College of Education, University of Illinois, Urbana, and supported by a grant from the Research

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[1]Conant, J. B. The Education of American Teachers, New York: McGraw-Hill, 1963.

[2]Oliver, D. W. and Shaver, J. P. "A Critique of 'Practice In Teaching,'" Harvard Educational Review, 31:437-448, 1961.

[3]Schueler, H. and Lesser, G. S. Teacher Education and the New Media, Washington, D.C., American Association of Colleges for Teacher Education, 1967, p. 85.

Coordinating Unit, Division of Vocational and Technical Education, Illinois State Board of Vocational Education and Rehabilitation. Two aspects of the student teaching process were investigated in this study. The first relates to the feedback mechanism which is one of the most essential factors in the supervisory process and the second relates to means and techniques of increasing the intensity and effectiveness of the supervisory process as a whole.

FEEDBACK PROCESSES IN SUPERVISION

Feedback in the supervisory process in student teaching is regularly obtained by recall and selective note-taking. When the student teacher is asked to appraise and critically analyze his performance, he has to rely mainly on his memory. Any experienced teacher might find it difficult to recall in detail many of the variables which took place in the interaction between the pupils and himself. Even more so is this true of the neophyte student teacher who plays a role before his peers or actually teaches in a classroom. Typically, he is anxious, tense, and nervous. The detailed interaction in the classroom and even the over-all impressions recorded in his memory are influenced by emotional status and various defense mechanisms. The picture recalled is very subjective and in many instances may have a partial or even complete blackout of many events and variables in the classroom interaction.

When the cooperating teacher or the college supervisor observes the lesson, notes on critical incidents are taken. The notes and the general recollection of incidents and over-all impressions provide the basis for the cooperating teacher's and supervisor's analysis and interaction with the student teacher. It is safe to assume that here again, emotional attitude, personal bias, perceptual distortion, attention limitations, and degree of sensitivity influence general impressions and even note-taking. Moreover, memory lapses function also here, and distort the picture. These factors have led in the past to differences in recollections and in the perception of situations, and to overt or covert resistance upon the student teacher to accept the supervisor's evaluation and suggestions.

Various techniques have been developed and used in recent years to increase the effectiveness of classroom observation. In their review of the literature, Medley and Mitzel (1963)[4] describe a number of systems designed to measure classroom behavior (the teacher's and pupils' behavior) by systematic observation. Many of the systems reported by Medley and Mitzel have been modified through extensive research and have become more sophisticated. Recent studies have been reported (1968)[5] indicating

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[4]Medley, D. M. and Mitzel, H. E. "Measuring Classroom Behavior by Systematic Observation," Handbook of Research on Teaching, N. L. Gage (ed.), Chicago: Rand McNally and Company, 1963, pp. 247-328.

[5]American Educational Research Association 1968 Convention Proceedings, Chicago.

increased uses of Flanders' "interaction analysis"[6] in teachers' pre- and in-service education.

In recent years, some teachers and supervisors have been using audio-tape recordings as feedback mechanisms for self-appraisal and for appraisal by a supervisor. Many of the users of systematic observation techniques of classroom interaction are employing audio-tape recorders in addition to live observation or as a substitute for it. However, the audio-tape recorder has not yet become a regularly-accepted tool for self-appraisal and for supervising student teachers. The tape recorder feeds back only the audio stimuli in the classroom and ignores the many nonverbal stimuli that occur. Moreover, without very sensitive microphones it will pick up mainly the teacher's voice; thus, even the audio interaction is not complete. These disadvantages and the general resistance to self-confrontation have not encouraged the use of this medium. It is interesting to note that in some other areas, such as in counselor training, the audio-tape recorder has been used very extensively and, according to research, quite effectively.

There are also research reports of various studies using time-lapse photography and motion pictures for the analysis of classroom interaction. Motion pictures with sound are still an expensive medium for feedback. Moreover, they require some time for developing the film; thus, there is not an immediate feedback.

The advent of the portable video-tape recorder, a relatively inexpensive medium (from $1,500 to $3,500), may offer solutions to some of the problems discussed above.

Pomeroy, in his introduction to Teacher Education and the New Media,[7] suggests that video-tape recording

> offers exciting and new possibilities for stimulation and control of the classroom situation. The result is the birth of a new field within teacher education where such mediated situations provide content for analytical discussions on student teacher behavior and performance at a level of precision and actuality which has never before been possible.

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[6] Amidon, E. J. and Hough, J. B., (eds.), Interaction Analysis: Theory, Research and Application. Reading, Massachusetts: Addison-Wesley Publishing Company, 1967. (For more references on interaction analysis, see bibliography.)

[7] Op. cit.

MICRO-TEACHING TECHNIQUES

Micro-teaching* is a teaching encounter scaled down in class size and class time. Class size is usually three to six students and class time from five to twenty-minute lessons. The purpose of micro-teaching is to provide prospective student teachers with a substantial amount of actual teaching practice preceding their entrance into student teaching. This is done with optimum control and evaluation procedures without jeopardizing the learning of the pupils. The process takes place in "teaching laboratories" with emphasis on acquiring specific teaching skills such as the ability to lecture, ask questions, lead a discussion, demonstrate, etc. The student teaches micro-lessons to micro-groups, practicing mainly on a specific skill for each lesson. Using the video tape of his presentation, the analysis of the tape done by a teaching methods specialist in his presence, and the evaluation of the learners, he plans a new lesson which is expected to be an improvement over his first lesson. Since the inception of the micro-teaching concept, Stanford and other universities have made many modifications of the system which are applied in different situations and for different purposes.

Micro-teaching techniques have already proven to be instrumental in improving teacher education processes in universities where student teachers practice in special laboratories or participate in special workshops. In addition, it is used effectively during student teaching in a variety of activities which will be described later in the discussion of the objectives of this study.

STUDENT TEACHING PROCEDURES

Student teaching at the University of Illinois in vocational-technical subjects (industrial education, agricultural education, and home economics education) consists of day-long attendance at the assigned school for seven calendar weeks. In addition, the student teacher can elect to put in a two-week period at the school when it opens in the fall.

Students may do their student teaching either in the fall or spring semesters. The typical fall student teacher's program in chronological order consists of the two-week observation period in the school, seven weeks in an on-campus methods course, seven weeks back at the school for his regular student teaching, and two weeks of review and analysis of his experiences. For the spring student teacher, the only change is that, since the two-week period can be done only at the

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*The term "micro-teaching" was coined by Dwight Allen of the Stanford University Teacher Education Program while he was pioneering in the application of the system to teacher education. Extensive literature on the system is cited in the bibliography.

opening of school in the fall, there is a break of about six months before he returns to the school.

Supervisory calls are specified as three one-half day visits during the regular period with no calls required for the two-week opening period. As a general practice among supervisors, the major objectives for the three calls are as follows: first visit, orientation and planning; second visit, observation of the student teacher in front of the entire class presenting a lesson (in industrial education he is required to give a demonstration to one class and a lecture to another); third visit, final evaluation of his work.

It is obvious that there is a very limited amount of time to actually observe the prospective teacher perform in a regular classroom since this cannot reasonably be done on the first call and seldom can be added to the work that must be completed during the last visit. In effect, the supervisor, halfway through the student teaching period, critiques the student teacher's presentations and returns in two or three weeks for his final call to learn from the cooperating teacher of the progress made by the student teacher. While it is accepted that additional firsthand observations and more adequate time for analysis will improve the student teaching process, the supervisory load for University staff members seldom permits calls beyond the minimum number required.

Part of the problem of limited time for supervisory calls lies in the fact that student teachers can be assigned to any school district in the State. To place student teachers with the best cooperating teachers, the clinical professor typically has a sizable amount of traveling to do in spite of his efforts to cut down on travel time by grouping his calls geographically.

Cooperating teachers are selected by the University supervisor for their ability to teach their pupils and for their skill in guiding student teachers. Although considerable latitude is given, the cooperating teacher knows what is expected of the student teacher and plans his activities accordingly.

One other factor in the traditional student teaching situation should be considered and this is the limited amount of time available to some cooperating teachers for consulting with and guiding their student teachers. With a few there is not even a free period during the day for essential work of this nature.

From the above description, it would seem evident that present student teaching practices could be greatly improved and much more could be done to prepare student teachers for their teaching tasks. There is a growing realization that teacher education in the United

States is too verbal[8] and that student teaching experiences are not structured enough to obtain maximum effective learning. The over-all tone of Verdium[9] is that the student teacher is not provided with adequate practical advice and know-how to cope with many classroom situations. In many instances, teachers are not prepared to engage in teaching and classroom management with children and youth of different backgrounds and values. Fear, anxieties, and a feeling of helplessness have probably already taken a toll among student teachers who intended to choose education as a career but were not prepared for the confrontation with real situations. Many others struggle through trial and error in order to establish their roles.

OBJECTIVES OF THE STUDY

This is a pilot study. Its purpose is to investigate the feasibility of using video-tape recordings (VTR's) and micro-teaching techniques to improve the training of student teachers during their student teaching period. It was hypothesized that this can be achieved by supplying the college supervisor with a greater amount of significant information than his limited number of visits would permit and by providing him with a systematic technique by which to analyze this information.

It was planned that the supervisor would continue to make his usual number of calls (three) on the student teacher; however, through recordings which were to be taped in his absence and sent to him, he would have a better understanding of the student teacher's strong and weak points and thus do a far more satisfactory job of bringing about improvement. It was felt, too, that recordings made during his visits and replayed in the presence of the student teacher would provide a better basis for their conferences. With the equipment available in the school for several days at a time, the student teacher would be taped by the cooperating teacher. Together they would review and analyze the student teacher's performance. Likewise, it looked promising to encourage the cooperating teacher to be taped to allow him to show specifically how he presents subject matter and handles the various problems that arise in a learning environment.

The specific objectives for the study were as follows:

1. To explore the use of VTR's and micro-teaching techniques for self-appraisal and self-instruction on the part of the student teacher.

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[8]LaGrone, Herbert. A Proposal for the Revision of the Pre-Service Professional Components of a Program of Teacher Education. Washington, D.C.: The American Association of Colleges for Teacher Education, 1964.

[9]Verdium, J.R. Conceptual Models in Teacher Education--An Approach to Teaching and Learning. Washington, D.C.: The American Association of Colleges for Teacher Education, 1967.

2. To explore the uses of VTR's and micro-teaching techniques in the daily supervisory process conducted by the co-operating teacher.

3. To explore the uses of VTR's as a feedback mechanism to increase the effectiveness of the college supervisor during his regular visits in evaluating and suggesting improvements in the work of the student teacher.

4. To explore and evaluate the possibilities and benefits of VTR's recorded in the school and sent to the College supervisor for analysis and critique by mail or through a telephone conference.

5. To develop a collection of selected VTR's which will serve to illustrate critical teaching incidents and models for discussion purposes in college methods courses and with individual student teachers.

6. To develop a working plan for the introduction of VTR's into the regular supervisory program for student teaching in vocational-technical education. Such a plan should include suggestions regarding equipment, supplies, budget, personnel, administration, and training.

DESCRIPTION OF ACTIVITIES

1. Activities for student teachers in their teaching methods course prior to their regular student teaching. Student teachers in the Department of Vocational and Technical Education who participated in the study attended a number of special classes in the newly-established Teaching Technique Laboratory sponsored by the Office of Student Teaching in the College of Education. They were introduced to several teaching skills such as demonstration or use of audio-visual aids which are especially common in vocational-technical education. They also were familiarized with the operation of portable video recorders in the classroom and with the use of VTR's as feedback mechanisms in analyzing the teaching process. Some instruction on these problems also was given in the methods course.

2. Workshop for cooperating teachers. A one-day orientation session was conducted before student teaching began. The cooperating teachers received training in the operation of the video tape equipment. They were also introduced to the rationale and uses of the micro-teaching techniques. The project's research procedures were also discussed.

3. Activities during the student teaching period. A research assistant was responsible for transporting the equipment to the student teachers at each school. While there, he made a spot check of the student teacher's and cooperating teacher's abiiity to use it properly.

The following basic schedule was used to guide the cooperating teacher and student teacher during the time when the equipment was located in their school:

Phase 1 Taping of the cooperating teacher and class by the student teacher

Phase 2 Taping of the student teacher and class by the cooperating teacher for self-appraisal by the student teacher

Phase 3 Taping of the student teacher and class by the cooperating teacher for analysis and assistance by the cooperating teacher

Phase 4 Taping of the student teacher and class by the cooperating teacher. Tapes to be sent to the College supervisor for his analysis, comments, and suggestions, by mail or by telephone conference.

Since there were only two sets of equipment to be used in the schools, a limited number of two or three calls with equipment was made to each school. Equipment was left at each school for two to three days in order to pursue activities.

In some cases, in addition to the video tape, an audio recording was made. During the telephone conference which was conducted on a special University line, the College supervisor was observing the video tape on a monitor and the student teacher with the cooperating teacher were listening to the audio tape. Assuredly when video recordings are available in schools, both student and cooperating teachers will observe their tape and the College supervisor will observe a copy of it while conducting the conference.

EQUIPMENT

To carry out this project two sets of one-half inch Sony videotape equipment were obtained, each consisting of two cameras, a recorder, a small TV monitor, three microphones, and an amplifier-mixer which allows more than one microphone to be used at one time. Two different units were designed and built to house the equipment and to transport

it between the various schools, one set on casters to be carried in a station wagon, the second set, except for the recorder, in a suit-case-like unit to be carried in a standard automobile.

With well-written instructions and color coding of all electrical connections, the sets have been set up and operated on a full schedule with no lost time.

SOME INTERIM OBSERVATIONS

The pilot study described above has not yet been completed and the following should be viewed as interim observations. The investigators tend to assume, however, that these findings also will be part of the concluding observations which will be published in the final report.

1. General Attitudes. From oral discussions and written reports of students and cooperating teachers, it is evident that the project activities were accepted as important and valuable by all participants. Moreover, in some cases the responses indicate enthusiasm which has manifested itself in the readiness of participants to practice with the media on weekends and in the evenings, carrying some of the research activities on a voluntary basis. In general, a high degree of cooperation with investigators on all structured activities and initiation of new activities was achieved during the first phase of this research.

It must be stressed that a strong "Hawthorne effect" is involved in the above-described attitudes. Self-confrontation on a video tape could constitute a certain psychological threat even to people who have experienced it and could result in many cases in complete reluctance to participate in such an experiment. Interestingly enough, however, the investigators encountered no problems in this area. The preparatory workshop for all participants has proven to be a fruitful introduction to the project, to procedural techniques, and to the media involved. In general, a permissive, non-threatening atmosphere was introduced which was condusive to the development of the project activities.

It may be assumed also that the novelty of the techniques and media is an important factor in creating enthusiasm. The fascination resulting from the technological phenomenon of being able to tape one's own image and see it on the spot helps people to overcome anxieties and creates eagerness to

participate. Furthermore, it seems that being able to appear on a television screen plays an important role in the participant's attitudes. The public's strong identification with television as a media would seem to contribute, too, to this strong motivation.

Whether this highly motivated participation will wear off as people get used to being on "television" could be determined only after a longer period of experimentation. However, one might hypothesize that as long as this process is not too threatening to the individual's integration he might be willing to participate for longer periods in such activities, just as "camera bugs" enjoy years of taking snapshots and movies of themselves and their surroundings.

2. Video Taping Feedback Mechanism, and Micro-teaching. It must be stressed that in the first period of the study greater emphasis was placed on the technical and logistic problems of delivering equipment to various schools, helping cooperating and student teachers acquire the skill and techniques of using this equipment, and guiding them in the initial process of self-confrontation and self-analysis. In the second phase of the project, greater emphasis will be placed on the uses of feedback mechanism and micro-teaching analytical techniques in the local school, during the student teaching period and during the regular school year to improve instruction.

Two important prerequisites for this phase are adequate free time for viewing tapes and proper supervision in the analysis of tapes. Using tapes for feedback mechanism and critical self-analysis is a time-consuming procedure, and unless such activities are scheduled in the daily work load, it is difficult to expect student teachers and especially cooperating teachers to do it on a voluntary basis. The guidance of a college supervisor in the analysis of tapes could not be more strongly stressed. Self-confrontation on tape might be threatening to the student teachers and experienced teachers alike, if proper support and encouragement are not available. On the other hand, the non-perceptive teacher or the one with ambivalent feelings about self-confrontation might view himself without being aware of problems which need remediation.

The time element is strongly related to the availability of equipment in the local school system. Within the limitations of the project, the student and cooperating teachers had to adapt themselves to our schedule and availability of equipment. The limited number of tapes caused some cases to forego reviewing tapes made in the classroom; moreover, in other cases, even the research staff (University professors

and assistants) did not have enough time to review all incoming tapes for the various schools. However, even if there were equipment in each school, arrangements must be made to reduce the college supervisor's and cooperating teacher's regular loads during the student teaching period, in order to enable them to devote more time to analysis of the feedback from the student teacher's classes and to work with the student teacher in areas needing improvement.

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